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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Subsidiary Body for Scientific and Technological Advice
Forty-second session
Bonn, 1– 11 June 2015

Item 8(c) of the provisional agenda
Methodological issues under the Convention
Emissions from fuel used for international aviation and maritime transport

Information relevant to emissions from fuel used for international aviation and maritime transport

Submissions from international organizations

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its forty-first session, invited the secretariats of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) to continue to report, at future sessions of the SBSTA, on relevant work on addressing emissions from fuel used for international aviation and maritime transport.[1]

2. The secretariat has received submissions from ICAO and IMO containing information on emissions from fuel used for international aviation and maritime transport. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced* in the language in which they were received and without formal editing.

[1] FCCC/SBSTA/2014/5, paragraph 79.

* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

FCCC/SBSTA/2015/MISC.4

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Contents

		Page
1.	International Civil Aviation Organization (Submission received 22 May 2015)	3
2.	International Maritime Organization (Submission received 22 May 2015)	21

Paper no. 1: International Civil Aviation Organization

The Forty-second Session of the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA42)

(1 to 11 June 2015 – Bonn, Germany)

Agenda Item 8 (c)
Emissions from fuel used for international aviation and maritime transport

(Submission by the International Civil Aviation Organization (ICAO))

Executive Summary

ICAO and its Member States have been actively progressing on a strategy to address CO_2 emissions from international aviation, with our collective global aspirational goals for the international aviation sector of improving fuel efficiency by 2% per year and keeping the sector's CO_2 emissions from 2020 at the same level.

Key ICAO activities include the development and assistance for the implementation of mitigation measures, relating to aircraft technologies, operational improvements, sustainable alternative fuels for aviation, and a global market-based measure (MBM) scheme.

To respond to the agreement of the 38th ICAO Assembly to develop a global MBM scheme for international aviation, significant efforts are being made as Member States, the aviation industry and other stakeholders are working together to develop a proposal capable of being implemented from 2020, for decision by the 39th ICAO Assembly in 2016.

ICAO also conducted the first round of five regional MBM Global Aviation Dialogues (GLADs) seminars throughout April 2015, as a means to ensure the full engagement of all stakeholders and widest possible range of inputs.

To assist the implementation of concrete actions to reduce CO_2 emissions from international aviation by Member States, ICAO has been undertaking capacity building and assistance strategy, including recent 7 regional seminars held in all ICAO regions, which helped 77 Member States to voluntarily develop and submit their action plans to ICAO.

To facilitate financing for Member States' actions, ICAO established two partnerships – one with the European Commission (EC) and another with the Global Environment Facility (GEF) and United Nations Development Programme (UNDP).

With the increasing engagement of Member States, and in close partnership with the aviation industry and other international organizations, ICAO has been working actively to address emissions from international aviation, as the sector moves forward in achieving its ultimate vision of sustainable international aviation.

Resolution A38-18 text adopted by the 38th ICAO Assembly is provided in **Appendix B**.

RECENT ICAO DEVELOPMENTS

Voluntary States' Action Plans to Reduce International Aviation CO_2 Emissions

In response to the request of the 38th ICAO Assembly to organize seminars in the regions to provide States with practical, hands-on assistance in developing and enhancing their voluntary action plans on aviation CO_2 emissions reduction activities, 7 seminars were held in all the ICAO regions from April 2014 to March 2015. The material provided in each seminar is made available on the ICAO action plan website[2]. In addition, ICAO updated Doc 9988, *Guidance on the Development of States' Action Plans on CO_2 Emissions Reduction Activities*, including the incorporation of "Rules of Thumbs" which simplify the methodologies for the calculation of emission reduction benefits for inclusion in the action plans.

ICAO "Capacity Building and Assistance" seminars for States' Action Plans

- [illegible] • Mexico, Mexico
- 7 to 11 April 2014 • Lima, Peru
- [illegible] • Yaoundé, Cameroon
- 16 to 19 June 2014 • Nairobi, Kenya
- 28 to 30 October 2014 • Kuala Lumpur, Malaysia
- 10 to 12 March 2015 • Dubai, UAE
- 18 to 20 March 2015 • Warsaw, Poland
- 18 Sept 2015 • Montreal, Canada (ICAO Headquarters)

Other ICAO Seminars

- 9 to 10 Sept 2014 • ICAO Green Technologies Seminar
- 16 to 17 Sept 2015 • ICAO Global Aviation Partnerships Seminar

As of April 2015, 77 States representing approximately 83 per cent of global international aviation RTK voluntarily submitted action plans to ICAO. The Secretariat continues to directly contact national focal points to assist in developing and updating action plans. It is expected that 15 new action plans will be submitted by the end of 2015, and additional 14 new action plans will be submitted prior to the next Assembly in 2016. Most of the States (70%) that already submitted an action plan in 2012 are expected to be updating it prior to the next Assembly in 2016.

States' Action Plans to reduce aviation CO_2 emissions

- Opportunity for States to identify measures to reduce emissions, and specific needs for assistance
- Allows future progress toward the global environmental goals to be assessed

http://www.icao.int/environmental-protection/Pages/ClimateChange_ActionPlan.aspx

Current status of Action Plans submitted

- 77 States, representing 83% of global international aviation traffic, submitted action plans

[2] http://www.icao.int/Meetings/EnvironmentalWorkshops/Pages/2014-Seminars.aspx

Assistance to States

As part of ICAO's efforts to provide further assistance to States and facilitate access to financing for the development and implementation of States' action plans, ICAO established partnerships with the European Commission (EC), as well as with the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP).

The ICAO-EC joint assistance project, *Capacity Building for CO_2 Mitigation from International Aviation*, is a 6.5 million Euro project to assist fourteen States from Africa and the Caribbean in the development of their action plans; setting up of their aviation environmental systems; and implementation of measures to reduce aviation emissions. Following the kick-off seminars in the Dominican Republic in December 2014 and in Cameroon in February 2015, the national action plan teams have been established in all the selected States to start developing their action plans.

ICAO-EC partnership to assist Member States – 6.5 Million Euros

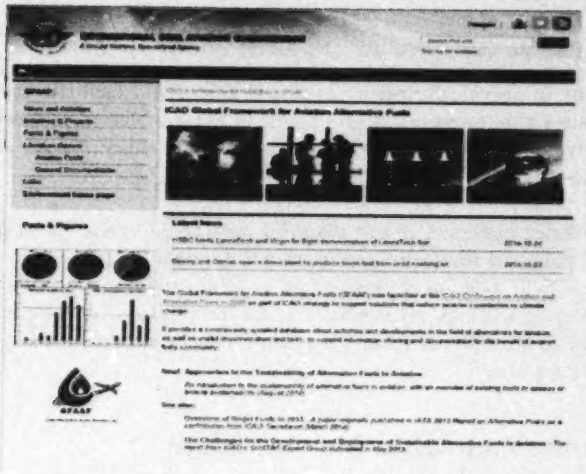
African Region	Caribbean Region
10 ECCAS States	Dominican Republic
Burkina Faso	Trinidad and Tobago
Kenya	

The ICAO-GEF-UNDP joint assistance project, *Transforming the Global Aviation Sector: Emission Reduction from International Aviation*, is a 2 million USD project, including the development of guidance and supporting mechanisms to assist the identification and implementation of measures to reduce aviation CO_2 emissions, and a practical pilot project in Jamaica consisting of the implementation of a measure that could be replicated in other States.

Sustainable Alternative Fuels for Aviation

ICAO has been at the forefront in promoting and facilitating the development and deployment of sustainable alternative fuels for aviation, including through information sharing on best practices among States and other stakeholders via the ICAO Global Framework for Aviation Alternative Fuels (GFAAF) website, and the promotion of global initiatives.

Technical work at ICAO on this subject focuses on a global projection of the future production of alternative jet fuels and of the associated range of potential emissions reductions. In this regard, the Alternative Fuels Task Force (AFTF) under the ICAO Committee on Aviation Environmental Protection (CAEP) has been working to develop a methodology for the assessment of full life-cycle CO_2 emissions, assess the future production of alternative jet fuel, and apply the life-cycle methodology to evaluate the associated emissions reductions in future.



ICAO Global Framework for Aviation Alternative Fuels (GFAAF) website (http://www.icao.int/environmental-protection/GFAAF/Pages/default.aspx)

Global Market-based Measure (MBM)

The agreement of the 38th ICAO Assembly on the development of a global MBM scheme for international aviation, reflects the strong support of Member States for a global solution for the international aviation industry. Significant efforts are being made as Member States, the aviation industry and other stakeholders are working together to develop a proposal for a global MBM scheme capable of being implemented from 2020, for decision by the 39th ICAO Assembly in 2016.

Good progress is being achieved by the ICAO Council's Environment Advisory Group (EAG) with technical support provided by the Committee on Aviation Environmental Protection (CAEP), using a "Strawman" approach, which started with a simple and basic proposal for a global MBM scheme with a view to generating the discussion and analyses on advantages and disadvantages of design elements and allowing for the improvements of the Strawman.

As a means to ensure the full engagement of States and other stakeholders and widest possible range of inputs, ICAO conducted the first round of five regional seminars – MBM Global Aviation Dialogues (GLADs) from 9 to 28 April 2015. The material provided in the GLADs is made available on the ICAO website[3]. The summary of the GLADs is provided in **Appendix A**.

ICAO Global Aviation Partnerships on Emissions Reductions (E-GAP) Seminar

ICAO Global Aviation Partnerships on Emissions Reductions (E-GAP) Seminar[4] is being held in Montréal, Canada from 16 to 17 September 2015. The Seminar provides a forum to showcase the actions and results achieved in reducing emissions from international aviation through partnerships between ICAO, governments and international organizations.

[3] http://www.icao.int/meetings/GLADs-2015/Pages/default.aspx
[4] http://www.icao.int/meetings/EGAP/

Such partnerships are enhancing environmental action by stakeholders, encouraging resource mobilization and facilitating further cooperation in new areas. The Seminar will focus on developments in aircraft technology and research programmes; recycling of aircraft; next generation air navigation and green operations; renewable energy and sustainable alternative fuels; financing for aviation environmental activities; and carbon markets.

The Seminar will also encourage dialogues to explore further opportunities for partnerships, and promote networking among stakeholders. During the Seminar, the E-GAP initiative will be launched to further strengthen partnerships and cooperation between ICAO and key stakeholders for reducing emissions from international aviation. The E-GAP initiative will be one of the core elements of the ICAO's input to the UNFCCC COP21 in Paris, France.

UNFCCC – CLIMATE FINANCE

One of the areas where international aviation was considered under the UNFCCC process is the issue of climate finance. The UNFCCC conferences adopted a series of decisions which included the work programme on long-term climate finance to further analyse options for the mobilization of USD 100 billion per year by 2020 from a wide variety of potential sources.

Some Parties expressed concern with the proposals to use international aviation as a potential source for mobilizing such revenue. Such proposals include the report of the World Bank (WB)/International Monetary Fund (IMF) under the G20 process in 2011, which explored global carbon charges of USD 25 per tonne of CO_2 emissions on international transport, which the report suggested could raise USD 12 billion per year by 2020 from international aviation.

The Negotiation text (document FCCC/ADP/2015/1) includes a proposal on the use of international aviation and maritime sectors as a source of financing for adaptation, and encouraging ICAO and IMO to develop a levy scheme to provide financing support for the Adaptation Fund (paragraph 116.5 of the Negotiating text).

It should be highlighted that in 2010, ICAO Member States adopted global aspirational goals for the international aviation sector of improving the sector's fuel efficiency by 2% per year and keeping its global CO_2 emissions from 2020 at the same level (carbon neutral growth from 2020). The achievement of the ICAO global aspirational goals requires adequate financial resources within the sector itself, enabling it to effectively respond to the global climate change challenge. It is of utmost importance that the development of a global MBM scheme for international aviation be treated as one element of a basket of mitigation measures to achieve the ICAO global aspirational goals, and not in isolation.

In this regard, the 38th Assembly urged that "ICAO and its Member States express a clear concern, through the UNFCCC process, on the use of international aviation as a potential source for the mobilization of revenue for climate finance to the other sectors, in order to ensure that international aviation would not be targeted as a source of such revenue in a disproportionate manner" (Assembly Resolution A38-18, paragraph 30). The Assembly also requested Member States to communicate and coordinate with their delegations of Parties to the UNFCCC process regarding developments on international aviation and climate change under ICAO.

The recent ICAO Council in March 2015 reiterated the need to act on the Assembly's requests above, and informed Member States to take appropriate action.

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APPENDIX A

Summary of Global Aviation Dialogues (GLADs)

1. Introduction

ICAO concluded its first round of Global Aviation Dialogues (GLADs) on market-based measures (MBMs) during April 2015. Two-day GLADs sessions were conducted in Lima, Peru (9 to 10 April), Nairobi, Kenya (14 to 15 April), Cairo, Egypt (20 to 21 April), Singapore (23 to 24 April) and Madrid, Spain (27 to 28 April).

Through the five GLADs conducted, ICAO reached 362 participants from 79 States (all 36 Council States plus 42 non-Council States) and 22 international organizations.

2. Organization and Format of GLADs

Each of the two-day GLADs was held in a unique format to facilitate the sharing of information and to encourage participant discussion.

Following an initial sequence of informative presentations that brought all participants to a common level of understanding on MBMs, participants were assigned to small discussion groups to undertake two thematic dialogues: one focused on questions related to design features of a global MBM scheme; and another focused on implementation challenges.

Each small group assigned a speaker from a State participant not represented on the Council, who successfully reported the group's summary to the plenary.

3. Summary of Dialogue Sessions

Main highlights for the dialogue session in the design of a global MBM included environmental integrity, the simplicity and cost-effectiveness of a global scheme, the need for differentiation without discrimination, and the goal of avoiding excessive cost or administrative burdens.

Regarding implementation challenges, States clearly requested more information, outreach and capacity building on a continuous basis. For the second round of GLADs, a concrete proposal for the global MBM scheme is essential.

4. Summary of Panel Discussions

The final session of the GLADs was an interactive panel discussion, formed by representatives from States, industry, environmental NGOs and financial institutions, where they exchanged views on various aspects of a global MBM, including on the carbon markets and availability of carbon credits for use by international aviation in the MBM scheme.

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APPENDIX B

ICAO Assembly Resolution A38-18: Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change

Whereas ICAO and its member States recognize the critical importance of providing continuous leadership to international civil aviation in limiting or reducing its emissions that contribute to global climate change;

Reemphasizing the vital role which international aviation plays in global economic and social development and the need to ensure that international aviation continues to develop in a sustainable manner;

Whereas the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC) is to achieve stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system;

Whereas the Kyoto Protocol, which was adopted by the Conference of the Parties to the UNFCCC in December 1997 and entered into force on 16 February 2005, calls for developed countries (Annex I Parties) to pursue limitation or reduction of greenhouse gases from "aviation bunker fuels" (international aviation) working through ICAO (Article 2.2);

Acknowledging that international aviation emissions, currently accounting for less than 2 per cent of total global CO_2 emissions, are projected to grow as a result of the continued development of the sector;

Whereas a comprehensive assessment of aviation's impact on the atmosphere is contained in the special report on *Aviation and the Global Atmosphere*, published in 1999, which was prepared at ICAO's request by the Intergovernmental Panel on Climate Change (IPCC) in collaboration with the Scientific Assessment Panel to the Montreal Protocol on Substances that Deplete the Ozone Layer;

Whereas the IPCC special report recognized that the effects of some types of aircraft emissions are well understood, it revealed that the effects of others are not, and identified a number of key areas of scientific uncertainty that limit the ability to project aviation's full impacts on climate and ozone;

Whereas ICAO requested that the IPCC include an update of the main findings of the special report in its Fourth Assessment Report, published in 2007 and its Fifth Assessment Report to be published in 2014;

Noting the scientific view that the increase in global average temperature above pre-industrial levels ought not to exceed 2°C;

Acknowledging the principles and provisions on common but differentiated responsibilities and respective capabilities, and with developed countries taking the lead under the UNFCCC and the Kyoto Protocol;

Also acknowledging the principles of non-discrimination and equal and fair opportunities to develop international aviation set forth in the Chicago Convention;

Recognizing that this Resolution does not set a precedent for or prejudge the outcome of negotiations under the UNFCCC and its Kyoto Protocol nor represent the position of the Parties to the UNFCCC and its Kyoto Protocol;

Recognizing that the aspirational goal of 2 per cent annual fuel efficiency improvement is unlikely to deliver the level of reduction necessary to stabilize and then reduce aviation's absolute emissions contribution to climate change, and that goals of more ambition will need to be considered to deliver a

sustainable path for aviation;

Noting that, to promote sustainable growth of aviation, a comprehensive approach, consisting of work on technology and standards, and on operational and market-based measures to reduce emissions is necessary;

Acknowledging the significant technological progress made in the aviation sector, with aircraft produced today being about 80 per cent more fuel efficient per passenger kilometre than in the 1960's;

Welcoming the agreement by the Committee on Aviation Environmental Protection (CAEP) of certification requirements for a global CO_2 Standard for aircraft;

Recognizing that air traffic management (ATM) measures under the ICAO's Global Air Navigation Plan contribute to enhanced operational efficiency and the reduction of aircraft CO_2 emissions;

Welcoming the adoption of the Aviation System Block Upgrades (ASBUs) strategy at the ICAO Twelfth Air Navigation Conference in November 2012;

Recalling that Assembly Resolution A37-19 requested the Council, with the support of member States, to undertake work to develop a framework for market-based measures (MBMs) in international aviation, including further elaboration of the guiding principles listed in the Annex to A37-19, for consideration by the 38th Session of the ICAO Assembly;

Recognizing the importance of avoiding a multiplicity of approaches for the design and implementation of MBM framework and MBM schemes;

Recalling that Assembly Resolution A37-19 requested the Council to explore the feasibility of a global MBM scheme to address emissions from international aviation;

Noting the decision of the Council on 9 November 2012, which recognized that the results of the qualitative and quantitative analysis of the three options for a global MBM scheme evaluated by the Secretariat with the support of the Experts on MBMs demonstrated that all three options were technically feasible and had the capacity to contribute to achieving ICAO's environmental goals, and that the Council agreed that further quantitative analysis of the three options needed to be undertaken to develop more robust and concrete conclusions;

Recognizing the potential desirability of a global MBM scheme in terms of providing an additional means of promoting achievement of the aspirational global goal referred to in paragraph 7;

Noting the support of the aviation industry for a single global carbon offsetting scheme, as opposed to a patchwork of State and regional MBMs, as a cost effective measure to complement a broader package of measures including technology, operations and infrastructure measures;

Noting that the Conference on Aviation and Alternative Fuels in November 2009 (CAAF/09) endorsed the use of sustainable alternative fuels for aviation, particularly the use of drop-in fuels in the short to mid-term, as an important means of reducing aviation emissions;

Also noting that the CAAF/09 established an ICAO Global Framework for Aviation Alternative Fuels (GFAAF);

Noting the progress achieved in proving the technological feasibility of drop-in sustainable

alternative fuels for aviation and that such fuels will require the introduction of appropriate policies and incentives to create a long-term market perspective;

Acknowledging the need for such fuels to be developed and deployed in an economically feasible, socially and environmentally acceptable manner and the need for increased harmonization of the approaches to sustainability;

Noting that, consistent with Assembly Resolution A37-19, a substantial strategy for capacity building was undertaken by the Organization to assist the preparation and submission of States' action plans, including the holding of hands-on training workshops and the development of guidance material, an interactive web-interface and the ICAO Fuel Savings Estimation Tool (IFSET);

Welcoming that, as of 30 June 2013, 61 member States that represent 78.89 per cent of global international air traffic voluntarily prepared and submitted their action plans to ICAO;

Noting that the ICAO "Assistance for Action – Aviation and Climate Change" Seminar in October 2012 highlighted the active involvement of member States and international organizations in the activities related to States' action plans, explored possible sources of financial support for environmental action and provided an opportunity to share information and build partnerships in order to facilitate assistance identified by States for the preparation and implementation of their action plans;

Recognizing the different circumstances among States in their capacity to respond to the challenges associated with climate change and the need to provide necessary support, in particular to developing countries and States having particular needs;

Affirming that specific measures to assist developing States as well as to facilitate access to financial support, technology transfer and capacity building should be initiated as soon as possible;

Whereas the Kyoto Protocol provides for different flexible instruments (such as the Clean Development Mechanism — CDM) which would benefit projects involving developing States;

Affirming that addressing GHG emissions from international aviation requires the active engagement and cooperation of States and the industry, and *noting* the collective commitments announced by Airports Council International (ACI), Civil Air Navigation Services Organisation (CANSO), International Air Transport Association (IATA), International Business Aviation Council (IBAC) and International Coordinating Council of Aerospace Industries Associations (ICCAIA) on behalf of the international air transport industry, to continuously improve CO_2 efficiency by an average of 1.5 per cent per annum from 2009 until 2020, to achieve carbon neutral growth from 2020 and to reduce its carbon emissions by 50 per cent by 2050 compared to 2005 levels;

Recognizing the need to monitor and report the potential impacts of climate change on international aviation operations and related infrastructure; and

Recognizing the progress made by ICAO in its implementation of the Climate Neutral UN initiative and the significant support provided by ICAO to the initiative, in particular through the development of a common methodology for calculating GHG emissions from air travel;

The Assembly:

1. *Resolves* that this Resolution, together with Resolution A38-17: Consolidated statement of continuing ICAO policies and practices related to environmental protection - General provisions, noise and local air quality, supersede Resolutions A37-18 and A37-19 and constitute the consolidated statement of continuing ICAO policies and practices related to environmental protection;

2. *Requests* the Council to:

a) ensure that ICAO exercise continuous leadership on environmental issues relating to international civil aviation, including GHG emissions;

b) continue to study policy options to limit or reduce the environmental impact of aircraft engine emissions and to develop concrete proposals and provide advice as soon as possible to the Conference of the Parties of the UNFCCC, encompassing technical solutions and market-based measures, and taking into account potential implications of such measures for developing as well as developed countries; and

c) continue to cooperate with organizations involved in policy-making in this field, notably with the Conference of the Parties to the UNFCCC;

3. *Reiterates* that:

d) ICAO should continue to take initiatives to promote information on scientific understanding of aviation's impact and action undertaken to address aviation emissions and continue to provide the forum to facilitate discussions on solutions to address aviation emissions; and

e) emphasis should be on those policy options that will reduce aircraft engine emissions without negatively impacting the growth of air transport especially in developing economies;

4. *Reaffirms* that this Resolution does not set a precedent for or prejudge the outcome of negotiations under the UNFCCC and its Kyoto Protocol nor represent the position of the Parties to the UNFCCC and its Kyoto Protocol;

5. *Resolves* that States and relevant organizations will work through ICAO to achieve a global annual average fuel efficiency improvement of 2 per cent until 2020 and an aspirational global fuel efficiency improvement rate of 2 per cent per annum from 2021 to 2050, calculated on the basis of volume of fuel used per revenue tonne kilometre performed;

6. *Agrees* that the goals mentioned in paragraph 5 above would not attribute specific obligations to individual States, and the different circumstances, respective capabilities and contribution of developing and developed States to the concentration of aviation GHG emissions in the atmosphere will determine how each State may voluntarily contribute to achieving the global aspirational goals;

7. *Also resolves* that, without any attribution of specific obligations to individual States, ICAO and its member States with relevant organizations will work together to strive to achieve a collective medium term global aspirational goal of keeping the global net carbon emissions from international aviation from 2020 at the same level, taking into account: the special circumstances and respective capabilities of States, in particular developing countries; the maturity of aviation markets; the sustainable growth of the international aviation industry; and that emissions may increase due to the expected growth in international air traffic until lower emitting technologies and fuels and other mitigating measures are developed and deployed;

8. *Recognizes* the many actions that ICAO member States have taken and intend to take in support of the achievement of the collective aspirational goals, including air traffic management modernization, acceleration of the use of fuel-efficient aircraft technologies, and the development and deployment of sustainable alternative fuels, and *encourages* further such efforts;

9. *Agrees* to review, at its 39th Session, the goal mentioned in paragraph 7 above in light of progress towards the goal, studies regarding the feasibility of achieving the goal, and relevant information from States;

10. *Requests* the Council to continue to explore the feasibility of a long term global aspirational goal for international aviation, through conducting detailed studies assessing the attainability and impacts of any goals proposed, including the impact on growth as well as costs in all countries, especially developing countries, for the progress of the work to be presented to the 39th Session of the ICAO Assembly. Assessment of long term goals should include information from member States on their experiences working towards the medium term goal.

11. *Further encourages* States to submit their voluntary action plans outlining their respective policies and actions, and annual reporting on international aviation CO_2 emissions to ICAO;

12. *Invites* those States that choose to prepare or update their action plans to submit them to ICAO as soon as possible preferably by the end of June 2015 and once every three years thereafter, in order that ICAO can continue to compile the information in relation to achieving the global aspirational goals, and the action plans should include information on the basket of measures considered by States, reflecting their respective national capacities and circumstances, information on the expected environmental benefits from the implementation of the measures chosen from the basket, and information on any specific assistance needs;

13. *Encourages* States that already submitted their action plans to share information contained in their action plans and build partnerships with other member States in order to support those States that have not prepared their action plans;

14. *Encourages* States to make their action plans available to the public, taking into account the commercial sensitivity of information contained in States' action plans;

15. *Requests* the Council to facilitate the dissemination of economic and technical studies and best practices related to aspirational goals and to continue to provide guidance and other technical assistance for the preparation and update of States' action plans prior to the end of June 2015, in order for States to conduct their necessary studies and to voluntarily submit their action plans to ICAO;

16. *Resolves* that States, when designing new and implementing existing MBMs for international aviation should:

a) engage in constructive bilateral and/or multilateral consultations and negotiations with other States to reach an agreement, and

b) grant exemptions for application of MBMs on routes to and from developing States whose share of international civil aviation activities is below the threshold of 1% of total revenue ton kilometres of international civil aviation activities, until the global scheme is implemented;

17. *Requests* the Council to review the *de minimis*, including the *de minimis* threshold of MBMs mentioned in paragraph 16 b) above, taking into account the specific circumstances of States and potential impacts on the international aviation industry and markets, and with regard to the guiding principles listed in the Annex, to be presented for consideration by the 39th Session of the Assembly in 2016;

18. *Decides* to develop a global MBM scheme for international aviation, taking into account the work called for in paragraph 19;

19. *Requests* the Council, with the support of member States, to:

a) finalize the work on the technical aspects, environmental and economic impacts and modalities of the possible options for a global MBM scheme, including on its feasibility and practicability, taking into account the need for development of international aviation, the proposal of the aviation industry and other international developments, as appropriate, and without prejudice to the negotiations under the UNFCCC;

b) organize seminars, workshops on a global scheme for international aviation participated by officials and experts of member States as well as relevant organizations;

c) identify the major issues and problems, including for member States, and make a recommendation on a global MBM scheme that appropriately addresses them and key design elements, including a means to take into account special circumstances and respective capabilities as provided for in paragraphs 20 to 24 below, and the mechanisms for the implementation of the scheme from 2020 as part of a basket of measures which also include technologies, operational improvements and sustainable alternative fuels to achieve ICAO's global aspirational goals; and

d) report the results of the work in sub-paragraphs a), b) and c) above, for decision by the 39th Session of the Assembly;

20. *Resolves* that an MBM should take into account the special circumstances and respective capabilities of States, in particular developing States, while minimizing market distortion;

21. *Also resolves* that special circumstances and respective capabilities of developing States could be accommodated through *de minimis* exemptions from, or phased implementation for, the application of an MBM to particular routes or markets with low levels of international aviation activity, particularly those serving developing States;

22. *Also resolves* that, the administrative burden associated with the implementation of an MBM to States or aircraft operators with very low levels of international aviation activity should not exceed the benefits from their participation in the MBM, and that exemptions from the application of the MBM to such States or aircraft operators should be considered, while maintaining the environmental integrity of the MBM;

23. *Also resolves* that adjustments to MBM requirements for aircraft operators could be on the basis of fast growth, early action to improve fuel efficiency, and provisions for new entrants;

24. *Further resolves* that, to the extent that the implementation of an MBM generates revenues, it should be used in consistency with guiding principle n) in the Annex;

25. *Recognizes* that in the short term voluntary carbon offsetting schemes constitute a practical way to offset CO_2 emissions, and *invites* States to encourage their operators wishing to take early actions to use carbon offsetting, particularly through the use of credits generated from internationally recognized schemes such as the CDM;

26. *Requests* the Council to collect information on the volume of carbon offsets purchased in relation to air transport, including through States' action plans submitted to ICAO, and to continue to develop and disseminate best practices and tools, such as the ICAO Carbon Emissions Calculator, that will help harmonize the implementation of carbon offset programmes;

27. *Requests* the Council to maintain and enhance appropriate standard, methodologies and a mechanism to measure/estimate, monitor and verify global GHG emissions from international aviation, and States support the work of ICAO on measuring progress through the reporting of annual data on traffic, fuel consumption and CO_2 emissions;

28. *Requests* the Council to request States to continue to support the efforts of ICAO on enhancing the reliability of measuring/estimating global GHG emissions from international aviation;

29. *Requests* the Council to regularly report CO_2 emissions from international aviation to the UNFCCC, as part of its contribution to assessing progress made in the implementation actions in the sector based on information approved by its member States;

30. While recognizing that no effort should be spared to obtain means to support the reduction and stabilization of CO_2 emissions from all sources, *urges* that ICAO and its member States express a clear concern, through the UNFCCC process, on the use of international aviation as a potential source for the mobilization of revenue for climate finance to the other sectors, in order to ensure that international aviation would not be targeted as a source of such revenue in a disproportionate manner;

31. *Requests* the Council to:

a) continue to play a pivotal role in providing assistance to its member States through the dissemination of the latest information on best practices and the provision of guidance and other technical assistance to enhance capacity building and technology transfer, including through the ICAO Technical Cooperation Programme;

b) consolidate and build on the partnership with other international organizations to meet the assistance needs of ICAO's member States, including through their action plans, which will bring about reductions in international aviation emissions;

c) initiate work immediately and as a priority in order to develop a process and mechanisms to facilitate the provision of technical and financial assistance, as well as facilitate access to existing and new financial resources, technology transfer and capacity building, to developing countries and report on results achieved as well as further recommendations, preliminarily by the end of 2015 and at the 39th Session of the Assembly; and

d) continue to initiate specific measures to assist developing States as well as to facilitate access to financial resources, technology transfer and capacity building;

32. *Requests* States to:

a) promote scientific research aimed at continuing to address the uncertainties identified in the IPCC special report on Aviation and the Global Atmosphere and in the Fourth Assessment report;

b) ensure that future international assessments of climate change undertaken by IPCC and other relevant United Nations bodies include updated information, if any, on aircraft-induced effects on the atmosphere;

c) consider policies to encourage the introduction of more fuel efficient aircraft in the market;

d) accelerate investments on research and development to bring to market even more efficient technology by 2020;

e) accelerate the development and implementation of fuel efficient routings and procedures to reduce aviation emissions;

f) accelerate efforts to achieve environmental benefits through the application of technologies that improve the efficiency of air navigation and work with ICAO to bring these benefits to all regions and States, taking into account the Aviation System Block Upgrades (ASBUs) strategy;

g) reduce legal, security, economic and other institutional barriers to enable implementation of the new ATM operating concepts for the environmentally efficient use of airspace;

h) set a coordinated approach in their national administrations in order to develop policy actions to accelerate the appropriate development, deployment and use of sustainable alternative fuels for aviation, in accordance with their national circumstances;

i) consider measures to support research and development as well as processing technology and feedstock production in order to decrease costs and support scale-up of sustainable production pathways up to commercial scale, taking into account the sustainable development of States;

j) recognize existing approaches to assess the sustainability of all alternative fuels in general, including those for use in aviation which should:

   1) achieve net GHG emissions reduction on a life cycle basis;

   2) respect the areas of high importance for biodiversity, conservation and benefits for people from ecosystems, in accordance with international and national regulations;

   3) contribute to local social and economic development, and competition with food and water should be avoided;

k) adopt measures to ensure the sustainability of alternative fuels for aviation, building on existing approaches or combination of approaches, and monitor, at a national level, the sustainability of the production of alternative fuels for aviation;

l) work together through ICAO and other relevant international bodies, to exchange information and best practices, including on the sustainability of alternative fuels for aviation;

33. *Requests* the Council to:

a) continue to develop and keep up-to-date the guidance for member States on the application of policies and measures aimed at reducing or limiting the environmental impact of emissions from international aviation, and conduct further studies with respect to mitigating the impact of international aviation on climate change;

b) encourage States to cooperate in the development of predictive analytical models for the assessment of aviation impacts;

c) continue evaluating the costs and benefits of the various measures, including existing measures, with the goal of addressing aircraft engine emissions in the most cost-effective manner, taking into account the interests of all parties concerned, including potential impacts on developing world;

d) provide the necessary guidance and direction to ICAO's Regional Offices to assist member States with studies, evaluations and development of procedures, in collaboration with other States in the region, to limit or reduce GHG emissions on a global basis and work together collaboratively to optimize the environmental benefits that can be achieved through their various programmes;

e) develop a global CO_2 Standard for aircraft aiming to finalize analyses by late 2015 and adoption by the Council in 2016;

f) further elaborate on relevant fuel efficiency metrics, including for international business aviation, and develop and update medium and long term technological and operational goals for aircraft fuel burn;

g) maintain and update guidance on ATM improvements and other operational measures to reduce international aviation emissions;

h) implement an emphasis on increasing fuel efficiency in all aspects of the ICAO's Global Air Navigation Plan, and encourage States and stakeholders to develop air traffic management that optimize environmental benefits and to promote and share best practices applied at airports in reducing the adverse effects of GHG emissions of civil aviation;

i) continue to develop and update the necessary tools and guidance to assess the benefits associated with ATM improvements, and assess the environmental benefits associated with the implementation of the Aviation System Block Upgrades (ASBUs) strategy;

j) encourage member States and invite industry, financial institutions and other international organizations to actively participate in exchange of information and best practices and in further work under ICAO on sustainable alternative fuels for aviation;

k) continue to maintain the ICAO Global Framework for Aviation Alternative Fuels (GFAAF);

l) collect information on progress of alternative fuels in aviation, including through States' action plans, to give a global view of the future use of alternative jet fuels and to account for changes in life cycle GHG emissions in order to assess progress toward achieving global aspirational goals;

m) work with financial institutions to facilitate access to financing infrastructure development projects dedicated to sustainable aviation alternative fuels and incentives to overcome initial market hurdles;

n) monitor and disseminate relevant information on the potential impacts of climate change on international aviation operations and related infrastructure, in cooperation with other relevant international organizations and the industry; and

o) continue to cooperate with the Climate Neutral UN initiative, remain at the forefront of developing methods and tools for quantifying aviation's GHG emissions with respect to the initiative, and further develop and implement the strategy for reducing GHG emissions and enhancing in-house sustainability management practices of the Organization.

Annex

The guiding principles for the design and implementation of market-based measures (MBMs) for international aviation:

a) MBMs should support sustainable development of the international aviation sector;

b) MBMs should support the mitigation of GHG emissions from international aviation;

c) MBMs should contribute towards achieving global aspirational goals;

d) MBMs should be transparent and administratively simple;

e) MBMs should be cost-effective;

f) MBMs should not be duplicative and international aviation CO_2 emissions should be accounted for only once;

g) MBMs should minimize carbon leakage and market distortions;

h) MBMs should ensure the fair treatment of the international aviation sector in relation to other sectors;

i) MBMs should recognize past and future achievements and investments in aviation fuel efficiency and in other measures to reduce aviation emissions;

j) MBMs should not impose inappropriate economic burden on international aviation;

k) MBMs should facilitate appropriate access to all carbon markets;

l) MBMs should be assessed in relation to various measures on the basis of performance measured in terms of CO_2 emissions reductions or avoidance, where appropriate;

m) MBMs should include *de minimis* provisions;

n) where revenues are generated from MBMs, it is strongly recommended that they should be applied in the first instance to mitigating the environmental impact of aircraft engine emissions, including mitigation and adaptation, as well as assistance to and support for developing States;

o) where emissions reductions are achieved through MBMs, they should be identified in States' emissions reporting; and

p) MBMs should take into account the principle of common but differentiated responsibilities and respective capabilities, the special circumstances and respective capabilities, and the principle of non-discrimination and equal and fair opportunities.

RESERVATIONS TO RESOLUTION A38-18

The following reservations were recorded by the States indicated below[5] in respect of specific provisions of Resolution A38-18 and are available on ICAO's website for the 38th Session of the Assembly:

Preambular paragraph 10	Australia
Paragraph 6	Australia
Paragraph 7	Argentina, Australia, Bahrain, Brazil, China, Cuba, India, Lithuania (on behalf of the 28 Member States of the European Union (EU[6]) and 14 other Member States of the European Civil Aviation Conference (ECAC[7])), the Russian Federation, Saudi Arabia and Venezuela (Bolivarian Republic of)
Paragraph 16	Lithuania (on behalf of the 28 Member States of the EU and 14 other Member States of ECAC) and Singapore
Paragraph 16 b)	Afghanistan, Australia, Canada, Japan, New Zealand, Qatar, the United Arab Emirates and the United States
Paragraph 20	Australia
Paragraph 21	Australia
Annex Guiding principle p)	Australia, Canada, Japan, Lithuania (on behalf of the 28 Member States of the EU and 14 other Member States of ECAC), New Zealand, the Republic of Korea and the United States

— END —

[5] During the Sixth Plenary Meeting on 4 October 2013, the Islamic Republic of Iran made a reservation to paragraph 16 a) and b) but withdrew it by an e-mail dated 4 October 2013 to the Secretary General.

[6] Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom

[7] Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, the Republic of Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, and The former Yugoslav Republic of Macedonia

Paper no. 2: International Maritime Organization

Note by the International Maritime Organization to the forty-second session of the Subsidiary Body for Scientific and Technological Advice (SBSTA 42)
Bonn, Germany, 1 to 11 June 2015

Agenda item 8(c)
Emissions from fuel used for international aviation and maritime transport

UPDATE ON IMO'S WORK TO ADDRESS EMISSIONS FROM FUEL USED FOR INTERNATIONAL SHIPPING

SUMMARY

IMO's Marine Environment Protection Committee (MEPC) has for some time now been considering, as an integral part of its agenda, actions to address greenhouse gas (GHG) emission from ships engaged in international trade. It met for its 68th session (MEPC 68) from 11 to 15 May 2015, at IMO Headquarters in London, with the participation of 99 Member States, 1 United Nations body, 5 intergovernmental organizations and 52 non-governmental organizations.

MEPC 68 continued its work on further developing guidelines to support the uniform implementation of the regulations on energy-efficiency for ships that entered into force on 1 January 2013 under MARPOL Annex VI. Furthermore, progress was made on the development of text to be the full language for a data collection system for fuel consumption of ships that can be readily used for voluntary/mandatory application of the system.

IMO is also continuing its efforts with regard to technical co-operation and capacity-building to ensure effective implementation and enforcement of the aforementioned new regulations worldwide and, importantly, activities to support the implementation of resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships*.

Introduction

1 International shipping plays an essential role in the facilitation of world trade as the most cost-effective and energy-efficient mode of mass cargo transport, making a vital contribution to international trade and being a key pillar of the development of a sustainable global economy.

2 IMO was established by Governments as a specialized agency under the United Nations to provide the machinery for intergovernmental cooperation in the field of regulation of ships engaged in international trade. IMO is responsible for the global regulation of all aspects of international shipping and has a key role in ensuring that lives at sea are not put at risk, including security of shipping, and that the environment is not polluted by ships' operations – as summed up in IMO's mission statement: **Safe, secure and efficient shipping on clean oceans**.

3 The mandatory energy efficiency requirements for international shipping have now been in force for over two years. Data presented to MEPC 68 clearly identifies the improvements made,

significant in many cases, in the energy efficiency of ships being designed and delivered today. This is a significant success story and once again demonstrates the IMO's important role as the global standard setter for international shipping. However, the complexity of optimizing the energy efficiency of existing ships requires that any future action taken is done so following the analysis of robust data.

4 This document provides an update to previous submissions by IMO to SBSTA including document FCCC/SBSTA/2014/MISC.9.

Work on control of GHG emissions from international shipping

5 Measures to improve energy efficiency of international shipping were adopted by Parties to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL) at MEPC 62 in July 2011 and entered into force on 1 January 2013. The *Regulations for energy efficiency of ships* apply to internationally trading ships of 400 gross tonnage and above, and make mandatory the:

.1 Energy Efficiency Design Index (EEDI) for new ships; and

.2 Ship Energy Efficiency Management Plan (SEEMP) for all ships.

6 The EEDI is a non-prescriptive, performance-based mechanism that leaves the choice of technologies to use in a specific ship design to the industry. So long as the required energy-efficiency level is attained, ship designers and builders are free to use the most cost-efficient solutions for the ship to comply with the regulations.

7 All ships of 400 gross tonnage and above engaged in international trade are required to implement and maintain a SEEMP which establishes a mechanism for operators to improve the energy efficiency of ships. This should be achieved by monitoring the energy efficiency performance of a ship's transportation work and at regular intervals considering new technologies and practices to improve energy efficiency.

8 MEPC 68 continued its work on further developing guidelines to support the uniform implementation of the regulations on energy-efficiency for ships and took the following actions:

.1 adopted amendments to the 2014 Guidelines on survey and certification of the EEDI, updating the previous version to include, for example, the latest ISO standard regarding sea trial speed analysis;

.2 adopted amendments to the 2013 Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions, as amended, to revise the level 1 power lines calculation assessment; and

.3 endorsed the progress report of the correspondence group established to review the status of technological developments relevant to implementing phase 2 of the EEDI regulatory framework that starts on 1 January 2020. Regulation 21.6 of MARPOL Annex VI requires, at the beginning of phase 1, the IMO to "review the status of technological developments and, if proven necessary, amend the time periods, the EEDI reference line parameters for relevant ship types and reduction rates set out in this regulation".

Third IMO GHG Study 2014

9 MEPC 67 approved the Third IMO GHG Study 2014, providing updated estimates for GHG emissions from ships. According to current estimates presented in this study, international shipping emitted 796 million tonnes of CO_2 in 2012, which accounts for no more than about 2.2% of the total emission volume for that year. By contrast, in 2007, before the global economic downturn, international shipping is estimated to have emitted 885 million tonnes of CO_2 which represented 2.8% of the global emissions of CO_2 for that year. These percentages are all the more significant when considering that shipping is the principal carrier of world trade, carrying as much as 90% by volume and therefore providing a vital service to global economic development and prosperity.

10 These updated emissions estimates are considered necessary, in general, to provide a better foundation for future work by IMO to address GHG emissions from international shipping especially as the Business as Usual scenarios, depending on future economic and energy developments, forecast a growth in CO_2 emissions for international maritime transport of between 50% to 250% in the period up to 2050. Sea transport is fuel-efficient and without these updated figures it would be difficult to provide a meaningful baseline to illustrate the steadily on-going improvement in fuel efficiency due to improved hull design, more effective diesel engines and propulsion systems and more effective utilization of individual ships resulting from the introduction of mandatory technical and operational measures.

11 The executive summary and the full report of the Third IMO GHG Study 2014 have now been published and are available on the IMO website:
http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Greenhouse-Gas-Studies-2014.aspx

Further technical and operational measures to enhance the energy efficiency of ships

12 MEPC 68 considered work undertaken by the intersessional Correspondence Group on Further technical and operational measures for enhancing energy efficiency. As instructed by MEPC 67 (October 2014), the correspondence group developed a proposed text for the full language of the data collection system for fuel consumption that can be readily used for voluntary or mandatory application of the system.

13 MEPC 68, noting that the full language had to be further developed, did not take a decision at this stage as to whether the data collection system should be voluntary or mandatory and agreed that when this is decided, the appropriate structure and language will be used.

14 MEPC 68 agreed that the development of a data collection system for ships should follow a three step approach: data collection, data analysis, followed by decision-making on what further measures, if any, are required.

15 MEPC 68 noted that one purpose of the data collection system was to analyze energy efficiency and that for this analysis to be effective some transport work data needs to be included. Therefore, work at MEPC 68 primarily focused on the development of the full language for a data collection system for fuel consumption and consideration was given to transport work and/or other proxies for inclusion in the data collection system.

16 In this regard, MEPC 68 agreed that data collected by the IMO, particularly that related to transport work, needs to be confidential and not publicly available, and that there is a need to address resulting administrative burdens, impact on industry and the variables that influence energy efficiency.

17 MEPC 68 established a Working Group on Further technical and operational measures for enhancing energy efficiency and instructed it to further develop the full language for the data collection system for fuel consumption, taking into consideration additional issues identified by the correspondence group such as:

.1 transfer of ship's flag State or ownership;

.2 data to be submitted to the flag State and by whom;

.3 whether or not issues like survey and port State control should be included in the text itself or form part of the guidelines; and

.4 need for clarity on which entity is responsible for reporting the data.

18 MEPC 68 approved the working group's report (MEPC 68/WP.10) in general and, inter alia, agreed on the text as set out in the annex to the report for its further development to be the full language for the data collection system for fuel consumption of ships that can be readily used for voluntary/mandatory application of the system.

19 Noting that further work should be undertaken intersessionally, MEPC 68 agreed to establish, subject to endorsement by the IMO Council in July, an intersessional working group and instructed it to further consider transport work and/or proxies for inclusion in the data collection system; further consider the issue of confidentiality; and consider the development of guidelines identified in the text. The group will report to MEPC 69, expected to be held in April 2016.

GHG reduction target for international shipping

20 MEPC 68 considered a document by the Marshall Islands (MEPC 68/5/1) providing justification for and requesting the MEPC to undertake the work necessary to establish a GHG emission reduction target for international shipping consistent with keeping global warming below 1.5°C, and to agree the measures necessary to reach that target.

21 In summarizing the views expressed and conclusions thereof, MEPC 68:

.1 expressed gratitude to the Marshall Islands for the submission of document MEPC 68/5/1 and the information therein acknowledging and recognizing the importance of the issue raised;

.2 recognized the measures already adopted by the IMO in relation to the reduction of emissions from ships, also recognizing that more could be done;

.3 was of the opinion that current work should continue to focus on further reduction of emissions from ships, particularly through the finalization of a data collection system;

.4 considered the issues raised by the Marshall Islands could be further addressed at a future session of the MEPC, acknowledging the need to move forward cautiously; and

.5 looked forward to a successful meeting of UNFCCC COP 21 in Paris later this year.

Technical co-operation and transfer of technology

22 Regulation 23 (Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships) of chapter 4 of MARPOL Annex VI requires Administrations, in co-operation with the IMO and other international bodies, to promote and provide, as appropriate, support directly or through IMO to Member States, especially developing States that request technical assistance. It also requires the Administration of a Party to MARPOL Annex VI to co-operate actively with other Parties, subject to its national laws, regulations and policies, to promote the development and transfer of technology and exchange of information to States which request technical assistance, particularly developing States.

23 Linked to the implementation of energy efficiency measures, MEPC 65 (May 2013) adopted resolution MEPC.229(65) on *Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships*, which, among other things, requests the IMO, through its various programmes, to provide technical assistance to Member States to enable cooperation in the transfer of energy efficient technologies to developing countries in particular; and further assist in the sourcing of funding for capacity building and support to States, in particular developing States, which have requested technology transfer.

24 MEPC 66 (April 2014) discussed the implementation of resolution MEPC.229(65) and established, in accordance with the resolution, an Ad Hoc Expert Working Group on Facilitation of Transfer of Technology for Ships (TT-EG). The TT-EG, during its first meeting, agreed on the methodology for conducting its work, as well as a work plan which was endorsed by the MEPC.

25 This work plan envisages: 1) assessing the potential implications and impacts of the implementation of the energy efficiency regulations in chapter 4 of MARPOL Annex VI, in particular on developing States, as a means to identify their technology transfer and financial needs; 2) identifying and creating an inventory of energy efficiency technologies for ships; 3) identifying barriers to transfer of technology, in particular to developing States, including associated costs, and possible sources of funding; and 4) making recommendations, including the development of a model agreement enabling the transfer of financial and technological resources and capacity building between Parties, for the implementation of the energy efficiency regulations.

26 MEPC 68 considered document MEPC 68/3/1 (Chairman of the TT-EG), providing a progress report on the work carried out to date by the TT-EG, and noted that full reports on the first three of the four tasks identified in the group's work plan were provided and that a complete report of all four tasks would be provided to MEPC 69. In this regard, MEPC 68 noted that the holding of the TT-EG's fourth meeting is tentatively scheduled for the end of September 2015.

27 Several delegations expressed their appreciation for the progress made to date by the group, noting in particular the usefulness of relevant regional workshops that had taken place, as a means to increase awareness of technology transfer in the context of energy efficiency of ships.

28 The delegation of Singapore informed MEPC 68 of a forthcoming international Conference on Maritime Technology Transfer and Capacity Building, to be held in Singapore on 28 and 29 September 2015, which is being organized in direct support of the work carried out by the MEPC and the TT-EG. MEPC 68 noted that the aim of the Conference, jointly organized by Singapore and IMO, was to generate a greater momentum towards more energy-efficient and low-carbon shipping through technology transfer; and that the Conference would provide a platform for the international shipping community to discuss, exchange ideas and identify priority areas on facilitating maritime technology transfer.

Technical cooperation activities

29 To ensure effective implementation and enforcement of the new energy efficiency regulations worldwide, IMO has also been focusing its efforts on technical co-operation and capacity building, and has been undertaking a series of regional and national workshops on implementation of the measures to address emissions from fuel used by international shipping. Under the Integrated Technical Co-operation Programme (ITCP) of IMO, further capacity-building activities are currently planned in 2015, in order to sustain the level of technical cooperation interventions in various regions for the effective implementation and enforcement of energy efficiency measures for ships.

30 Furthermore, with financial support from the Global Environment Facility (GEF), UNDP and IMO are cooperating in a global effort to transform the shipping industry towards a lower carbon future, through a project entitled *"Transforming the global maritime transport industry towards a low carbon future through improved energy efficiency"* (GloMEEP). Having received the support and commitment of ten Lead Pilot Countries, this two year global project will assist developing countries in the implementation of the energy efficiency measures adopted by IMO.

Summary

31 International maritime transport is the most energy efficient mode of mass transport. A global approach for further improvements in energy efficiency and GHG emission reduction is considered necessary as sea transport is predicted to grow significantly in the coming years in line with expected future growth in world trade.

32 IMO continues to develop its adopted framework of technical and operational measures that now serves as a mandatory performance standard for increased energy efficiency in international shipping. The framework builds on IMO's enforcement and control provisions (flag State implementation and port State control), and provides a suite of comprehensive technical guidelines for their effective implementation.

33 IMO, as the global regulator of international shipping, will continue its endeavours to reduce environmental impacts from international maritime transport, a vital industry to world trade and sustainable development, and keep relevant bodies of the UNFCCC informed of its progress

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